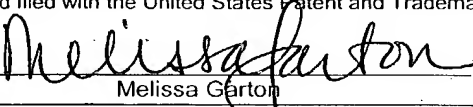
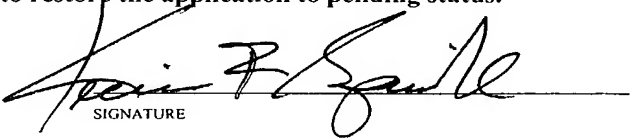


<p>®FORM PTO-1390 OFFICE (REV 11-2000)</p> <p style="text-align: center;">U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK</p> <p style="text-align: center;">TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. § 371</p>		<p>ATTORNEY'S DOCKET NUMBER</p> <p style="text-align: center;">449122020300</p> <p>U.S. APPLICATION NO. (If known, see 37 CFR 1.5) -</p> <p style="text-align: center; font-size: 1.5em;">10/031457 Not yet assigned</p>
<p>INTERNATIONAL APPLICATION NO</p> <p style="text-align: center;">PCT/DE00/02361</p>	<p>INTERNATIONAL FILING DATE</p> <p style="text-align: center;">July 19, 2000</p>	<p>PRIORITY DATE CLAIMED</p> <p style="text-align: center;">July 22, 1999</p>
<p>TITLE OF INVENTION</p> <p style="text-align: center;">RADIO TRANSCEIVER</p>		
<p>APPLICANT(S) FOR DO/EO/US</p> <p style="text-align: center;">Ludwig HOFMANN</p>		
<p>Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information</p> <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371 3. <input type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below. 4. <input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (PCT Article 31) 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> a. <input checked="" type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau) b. <input checked="" type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input checked="" type="checkbox"/> An English language translation of the International Application under PCT Article 19 (35 U.S.C. 371(c)(2)). <ol style="list-style-type: none"> a. <input checked="" type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4). 7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)). <ol style="list-style-type: none"> a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)) 9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). 10. <input type="checkbox"/> An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)) <p>Items 11. to 16. below concern document(s) or information included:</p> <ol style="list-style-type: none"> 11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. 14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment 15. <input type="checkbox"/> A substitute specification 16. <input type="checkbox"/> A change of power of attorney and/or address letter. 17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter 2 and 35 U.S.C. 1.821 - 1.825 18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4) 19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4) 20. <input checked="" type="checkbox"/> Other items or information 1) Application Data Sheet; 2) Int'l Search Report; 3) IPER; 4) Return receipt postcard. 		
<p>CERTIFICATE OF HAND DELIVERY</p> <p>I hereby certify that this correspondence is being hand filed with the United States Patent and Trademark Office in Washington, D.C. on January 22, 2002.</p> <p style="text-align: center;">  Melissa Garton </p>		

U.S. APPLICATION NO (if known, see 37 CFR 1.5) Not yet assigned 10/031457		INTERNATIONAL APPLICATION NO PCT/DE00/02361		ATTORNEY DOCKET NO 449122020300	
21. <input checked="" type="checkbox"/> The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO.....\$1,000.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO.....\$860.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO.....\$710.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provision of PCT Article 33(1)-(4)\$690.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)\$100.00				CALCULATIONS PTO USE ONLY	
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$860.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$0	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	- 20 =		x \$18.00	\$0	
Independent claims	- 3 =		x \$80.00	\$0	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$270.00	\$0	
TOTAL OF ABOVE CALCULATIONS =				\$860.00	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$0	
SUBTOTAL =				\$0	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				+	\$0
TOTAL NATIONAL FEE =				\$0	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				+	\$0
TOTAL FEES ENCLOSED =				\$860.00	
				Amount to be refunded:	\$
				charged:	\$
a. <input checked="" type="checkbox"/> Please charge my Deposit Account No. 03-1952 (referencing Docket No. 449122020300) in the amount of \$860.00 to cover the above fees. A duplicate copy of this sheet is enclosed.					
b. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees that may be required, or credit any overpayment to Deposit Account No. 03-1952 (referencing Docket No. 449122020300).					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO: Kevin R. Spivak Morrison & Foerster LLP 2000 Pennsylvania Avenue, N.W. Washington, D.C. 20006-1888					
 SIGNATURE				Kevin R. Spivak Registration No. 43,148	
January 22, 2002					

100131457 10/031457

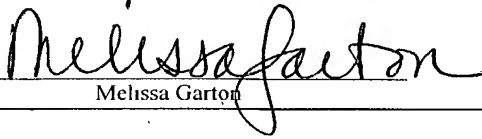
PATENT

Docket No. 449122020300

JG13 Rec'd PCT/PTO 22 JAN 2002

CERTIFICATE OF HAND DELIVERY

I hereby certify that this correspondence is being hand filed with the United States Patent and Trademark Office in Washington, D.C. on January 22, 2002.


Melissa Garton

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of:

Serial No.: Not yet assigned

Filing Date: January 22, 2002

For: RADIO TRANSCEIVER

Examiner: Not yet assigned

Group Art Unit: Not yet assigned

PRELIMINARY AMENDMENT

BOX PCT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination on the merits, please amend this application as follows:

In the Specification:

Page 1 before the first paragraph, please delete the following:

Description

Page 1, between lines 4 and 5, please insert the following headings and paragraph:

CLAIM FOR PRIORITY

This application claims priority to International Application No. PCT/DE00/02361 which was published in the German language on July 19, 2000.

TECHNICAL FIELD OF THE INVENTION

Please replace paragraph beginning line 5 of page 1 with the following rewritten paragraph:

The invention relates to a radio transceiver, and in particular, to a mobile telephone.

Page 1, between lines 8 and 9, please insert the following heading:

BACKGROUND OF THE INVENTION

Please replace the consecutive paragraphs beginning line 17 of page 1 with the following rewritten paragraphs:

The situation with mobile phones which utilize the future UMTS standard is different. In such devices having the full duplex mode, a chronological overlap between transmission mode and reception mode is permitted and occurs during operation. Therefore, in these devices – as is generally the case with the radio transceivers with chronological overlaps between transmission mode and reception mode – an efficient decoupling is necessary between the transmitter and receiver in order to avoid overloading or even destruction of the receiver input by the high power of the transmission signal.

The conventional art uses a duplex filter or a duplexer to solve the above noted problem. This comprises two high-quality bandpass filters with steep edges. At the transmission end, a transmission filter is used to suppress the transmitter noise and possible sideband emissions. At the receiver end, a reception filter ensures very high receiver selectivity. Alternatively, the aforementioned duplexer can also be embodied as a band-stop duplexer in which the

transmission filter is a band stop with a zero position in the reception band, and the reception filter is a band stop with a zero position in the transmission band.

Page 2, between lines 14 and 15, please insert the following headings and paragraphs:

SUMMARY OF THE INVENTION

In one embodiment of the invention, there is a radio transceiver which includes a transmitter output stage, a receiver part, a transmission/reception antenna which is jointly assigned to the transmitter output stage and the receiver part, a transmission band-transmitting filter which is connected between the output of the transmitter output stage and an antenna feedpoint, a reception band-transmitting filter which is connected between the antenna feedpoint and the input of the receiver part, a compensation element which is connected between the output of the transmitter output stage and the input of the receiver part and compensates crosstalk from a transmission signal element onto the receiver part and a compensation control unit to adaptively set compensation characteristics as a function of the input voltage or input power at the input of the receiver part being assigned to the compensation element, wherein a voltage measuring device which is connected to the compensation control unit measures the input voltage of the receiver part, the voltage measuring device comprising a device for IF conversion of the input signal of the receiver part, a bandpass filter which is connected downstream and an AM receiver part which is connected to its output and whose output is used to set the compensation characteristics.

In one aspect of the invention, wherein the compensation element is connected in parallel with the transmission band-transmitting filter and with the reception band-transmitting filter to the input of a reception pre-amplifier or reception mixer of the receiver part.

In another aspect of the invention, the bandpass filter is tuned to a reception frequency in narrowband fashion.

In yet another aspect of the invention, the compensation element is integrated into an RF component of the transmitter output stage or of the receiver part.

In still another aspect of the invention, the compensation element comprises highly integrated silicon technology.

In another aspect of the invention, the compensation characteristics include phase and amplitude of the output signal.

BRIEF DESCRIPTION OF THE DRAWINGS

The advantages and embodiments of the invention also emerge from the subclaims and from the following description of preferred exemplary embodiments with reference to the figures, of which:

Fig. 1 shows a schematic view of a first embodiment of the invention in the form of a functional block circuit diagram.

Fig. 2 shows a schematic view explaining the control of the compensation element from Fig. 1.

Fig. 3 shows a schematic view of a second embodiment of the invention in the form of a functional block circuit diagram.

Fig. 4 shows a schematic view a third embodiment of the invention in the form of a functional block circuit diagram.

Fig. 5 shows a schematic view of a fourth embodiment of the invention in the form of a functional block circuit diagram.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Please replace the paragraph beginning line 14 of page 2 with the following rewritten paragraph:

The invention discloses a radio transceiver with improved transmitter/receiver decoupling, which in particular requires less space and less expenditure for this function.

Please delete the paragraph beginning line 21 of page 2 in its entirety.

Please replace the consecutive paragraphs beginning line 24 of page 2 with the following rewritten paragraphs:

The invention includes a transmitter/receiver decoupling in a radio transceiver which operates with frequency-division multiplexing by compensating the transmission signal element present at the receiver input. This makes it possible to dispense with transmission and reception filters which have steep edges and cannot be constructed using integrated semi-conductor technology. This makes possible an integrated and space-saving and cost-effective embodiment of the decoupling device.

The compensation element is connected in parallel with a transmission band-transmitting filter and with a reception band-transmitting filter – neither of which need to satisfy any extreme requirements owing to the provision of the compensation element – and is connected to the input of a reception pre-amplifier or reception mixer of the receiver part.

The compensation element comprises a device to separately set the phase and amplitude of the signal to be processed so that it makes available an output signal which is suitable in terms of phase and amplitude for extinguishing crosstalk from a transmission signal element.

Please replace the paragraph beginning line 25 of page 3 with the following rewritten paragraph:

However, providing the compensation element with adaptive control allows it to be adapted more flexibly to different conditions of use and is therefore preferable. With this embodiment, changes in the antenna adaptation can be compensated, which can occur, for example, as a result of contact or close proximity of the antenna to conductive objects or to the body. The adaptive control is based on a voltage measurement at the receiver input, phase and amplitude being changed in the compensation element in such a way that this measured voltage is minimized. The means which are required for adaptively controlling the compensation element can be collectively described by the term "compensation control element". In addition to the measuring device – which can also be embodied as a power measuring device – this compensation control element comprises, in one preferred embodiment, a device for IF conversion of the input signal to a separate intermediate frequency (using the pre-amplifier and mixer which are included in the receiver part), a simple bandpass filter connected downstream and a simple AM receiver part connected downstream of the latter.

Please delete the paragraph beginning line 24 of page 4 in its entirety.

Please replace the paragraph beginning line 9 of page 5 with the following rewritten paragraph:

The components of a mobile phone 1 in one embodiment of the invention and their interaction are shown in Fig.1. A transmitter output stage 3, which receives a transmission signal at the input end, is connected at the output end via a transmission band-transmitting filter 5 to a

feedpoint 7a of a combined transmission/reception antenna 7. A reception band-transmitting filter 11 is connected between the feedpoint 7a of the antenna 7 and the input of a reception pre-amplifier 9, at whose output a pre-amplified reception signal is made available. The transmission curves of the transmission band-transmitting filter 5 and of the reception band-transmitting filter 11 have a frequency spacing from one another which is predetermined by the standard of the mobile phone system. According to the GSM standard (which, however, also provides for time-division duplex between the reception and transmission mode), this spacing is, for example, 45 MHz. The two transmitting filters 5, 11 form together a duplex filter, of which, however, less is demanded in terms of the edge steepness of the filter characteristic curves with the proposed solution than is demanded with a conventional mobile phone duplex filter, and which can therefore be implemented using integrated silicon technology.

Please replace the consecutive paragraphs beginning line 11 of page 6 with the following rewritten paragraphs:

Fig. 2 shows that the compensation element 13 has, in a preferred embodiment, a phase compensation element 13.1 and an amplitude compensation element 13.2 which is connected in series with the latter, both compensation elements 13.1, 13.2 each receiving a specific control signal "control of the phase response" or "control of the gain or attenuation" and their transmission characteristics being set by the respective control signal.

Fig. 3 is a further illustration of the mobile phone 1, according to Fig. 1. A compensation control element 15, which receives a supplementary information item for the transmission/reception mode as input signal and which controls the compensation element 13, is also illustrated. The compensation control unit 15 can have a memory which is structured in the

manner of a lookup table and in which assignments between predetermined transmission/reception frequencies or channels and suitable phase angle/amplitude response value pairs of the compensation element 13 are stored. If the mobile phone has only one possible frequency constellation or channel constellation for the transmission/reception mode, just a single pair of values is correspondingly provided. In addition, in one particularly flexible embodiment, the compensation control unit 15 can additionally process information which characterizes the state of the system at a given time; see below.

Please replace the paragraph beginning line 6 of page 8 with the following rewritten paragraph:

The embodiment can be implemented in integrated fashion using silicon technology, which is advantageous technologically and in terms of costs and service value. In the embodiment shown in Fig. 5, the mixer 21.1 and the pre-amplifier 21.3 of the AM receiver can be implemented with a mixer and pre-amplifier which are present in any case in the receiver part, so that in this respect there is no need for additional hardware expenditure.

In the Claims:

What is claimed is:

1. (Amended) A radio transceiver comprising:
a transmitter output stage;
a receiver part;

a transmission/reception antenna which is jointly assigned to the transmitter output stage and the receiver part;

a transmission band-transmitting filter which is connected between the output of the transmitter output stage and an antenna feedpoint;

a reception band-transmitting filter which is connected between the antenna feedpoint and the input of the receiver part;

a compensation element which is connected between the output of the transmitter output stage and the input of the receiver part and compensates crosstalk from a transmission signal element onto the receiver part; and

a compensation control unit to adaptively set compensation characteristics as a function of the input voltage or input power at the input of the receiver part being assigned to the compensation element, wherein a voltage measuring device which is connected to the compensation control unit measures the input voltage of the receiver part, the voltage measuring device comprising a device for IF conversion of the input signal of the receiver part, a bandpass filter which is connected downstream and an AM receiver part which is connected to its output and whose output is used to set the compensation characteristics.

2. (Amended) The radio transceiver as claimed in claim 1, wherein the compensation element is connected in parallel with the transmission band-transmitting filter and with the reception band-transmitting filter to the input of a reception pre-amplifier or reception mixer of the receiver part.

3. (Amended) The radio transceiver as claimed in claim 1, wherein the bandpass filter is tuned to a reception frequency in narrowband fashion.
4. (Amended) The radio transceiver as claimed in claim 1, wherein the compensation element is integrated into an RF component of the transmitter output stage or of the receiver part.
5. (Amended) The radio transceiver as claimed in claim 1, wherein the compensation element comprises highly integrated silicon technology.

Please add the following new claim:

6. (New) The radio receiver of claim 1, wherein the compensation characteristics include phase and amplitude of the output signal.

In the Abstract:

Please replace the Abstract in its entirety with the Abstract attached hereto.

REMARKS

The above amendments to the specification, claims, and abstract have been made to place the application in proper U.S. format and to conform with proper grammatical and idiomatic English. None of the amendments herein are made for reasons related to patentability. No new matter has been added.

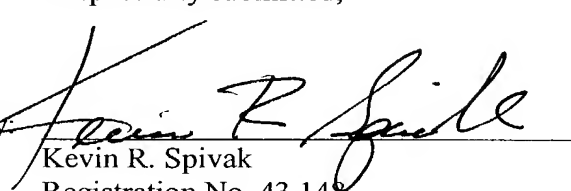
Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made**".

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 449122020300. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

Dated: January 22, 2002

By:


Kevin R. Spivak
Registration No. 43,148

Morrison & Foerster LLP
2000 Pennsylvania Avenue, N.W.
Washington, D.C. 20006-1888
Telephone: (202) 887-6924
Facsimile: (202) 263-8396

VERSION WITH MARKINGS TO SHOW CHANGES MADE

For the convenience of the Examiner, the changes made are shown below with deleted text in strikethrough and added text in underline.

In the Specification:

Page 1 before the first paragraph, please delete the following:

~~Description~~

Page 1, between lines 4 and 5, please insert the following headings and paragraph:

CLAIM FOR PRIORITY

This application claims priority to International Application No. PCT/DE00/02361 which was published in the German language on July 19, 2000.

TECHNICAL FIELD OF THE INVENTION

Please replace paragraph beginning line 5 of page 1 with the following rewritten paragraph:

The invention relates to a radio transceiver, and in particular, to a mobile telephone as ~~claimed in the preamble of claim 1.~~

Page 1, between lines 8 and 9, please insert the following heading:

BACKGROUND OF THE INVENTION

Please replace the consecutive paragraphs beginning line 17 of page 1 with the following rewritten paragraphs:

The situation with mobile phones which utilize ~~are embodied according to~~ the future UMTS standard is different. In such devices having ~~what is referred to as~~ the full duplex mode, a chronological overlap between transmission mode and reception mode is permitted and also occurs during operation. Therefore, in these devices – as is generally also the case with the radio transceivers with chronological overlaps between transmission mode and reception mode – an efficient decoupling is necessary between the transmitter and receiver in order to avoid overloading or even destruction of the receiver input by the high power of the transmission signal.

~~This problem is achieved according to the prior art by what is referred to as~~ The conventional art uses a duplex filter or a duplexer to solve the above noted problem. This basically comprises two high-quality bandpass filters with steep edges. At the transmission end, a transmission filter is used to suppress the transmitter noise and possible sideband emissions. At the receiver end, a reception filter ensures very high receiver selectivity. Alternatively, the aforementioned duplexer can also be embodied as a band-stop duplexer in which the transmission filter is a band stop with a zero position in the reception band, and the reception filter is a band stop with a zero position in the transmission band.

Page 2, between lines 14 and 15, please insert the following headings and paragraphs:

SUMMARY OF THE INVENTION

In one embodiment of the invention, there is a radio transceiver which includes a transmitter output stage, a receiver part, a transmission/reception antenna which is jointly assigned to the transmitter output stage and the receiver part, a transmission band-transmitting filter which is connected between the output of the transmitter output stage and an antenna

feedpoint, a reception band-transmitting filter which is connected between the antenna feedpoint and the input of the receiver part, a compensation element which is connected between the output of the transmitter output stage and the input of the receiver part and compensates crosstalk from a transmission signal element onto the receiver part and a compensation control unit to adaptively set compensation characteristics as a function of the input voltage or input power at the input of the receiver part being assigned to the compensation element, wherein a voltage measuring device which is connected to the compensation control unit measures the input voltage of the receiver part, the voltage measuring device comprising a device for IF conversion of the input signal of the receiver part, a bandpass filter which is connected downstream and an AM receiver part which is connected to its output and whose output is used to set the compensation characteristics.

In one aspect of the invention, wherein the compensation element is connected in parallel with the transmission band-transmitting filter and with the reception band-transmitting filter to the input of a reception pre-amplifier or reception mixer of the receiver part.

In another aspect of the invention, the bandpass filter is tuned to a reception frequency in narrowband fashion.

In yet another aspect of the invention, the compensation element is integrated into an RF component of the transmitter output stage or of the receiver part.

In still another aspect of the invention, the compensation element comprises highly integrated silicon technology.

In another aspect of the invention, the compensation characteristics include phase and amplitude of the output signal.

BRIEF DESCRIPTION OF THE DRAWINGS

The advantages and embodiments of the invention also emerge from the subclaims and from the following description of preferred exemplary embodiments with reference to the figures, of which:

Fig. 1 shows a schematic view of a first embodiment of the invention in the form of a functional block circuit diagram.

Fig. 2 shows a schematic view explaining the control of the compensation element from Fig. 1.

Fig. 3 shows a schematic view of a second embodiment of the invention in the form of a functional block circuit diagram.

Fig. 4 shows a schematic view a third embodiment of the invention in the form of a functional block circuit diagram.

Fig. 5 shows a schematic view of a fourth embodiment of the invention in the form of a functional block circuit diagram.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Please replace the paragraph beginning line 14 of page 2 with the following rewritten paragraph:

The invention is ~~therefore based on the object of making available~~ discloses a radio transceiver with improved transmitter/receiver decoupling, which in particular requires less space and less expenditure for this function.

Please delete the paragraph beginning line 21 of page 2 in its entirety.

Please replace the consecutive paragraphs beginning line 24 of page 2 with the following rewritten paragraphs:

The invention includes ~~the essential idea of largely bringing about the necessary a~~ transmitter/receiver decoupling in a radio transceiver which operates with frequency-division multiplexing by compensating the transmission signal element present at the receiver input. This makes it possible to dispense with transmission and reception filters which have steep edges and cannot be constructed using integrated semi-conductor technology, ~~and this ultimately~~ This makes possible an integrated, and thus space-saving and cost-effective embodiment of the decoupling ~~means~~ device.

The compensation element is ~~in particular~~ connected in parallel with a transmission band-transmitting filter and with a reception band-transmitting filter – neither of which need to satisfy any extreme requirements owing to the provision of the compensation element – and is connected to the input of a reception pre-amplifier or reception mixer of the receiver part.

The compensation element comprises, ~~in particular, means for~~ a device to separately setting set the phase and amplitude of the signal to be processed so that it makes available an output signal which is suitable in terms of phase and amplitude for extinguishing crosstalk from a transmission signal element.

Please replace the paragraph beginning line 25 of page 3 with the following rewritten paragraph:

However, ~~embodimenting~~ providing the compensation element with adaptive control allows it to be adapted more flexibly to different conditions of use and is therefore ~~preferred in~~ practice from the current view point preferable. With this embodiment, ~~it is also possible to~~

compensate changes in the antenna adaptation can be compensated, which can occur, for example, as a result of contact or close proximity of the antenna to conductive objects or to the body. The adaptive control is based on a voltage measurement at the receiver input, phase and amplitude being changed in the compensation element in such a way that this measured voltage is minimized. The means which are required for adaptively controlling the compensation element can be collectively described by the term "compensation control element". In addition to the measuring device – which can ~~overall~~ also be embodied as a power measuring device – this compensation control element comprises, in one preferred embodiment, ~~means for the~~ a device ~~for~~ IF conversion of the input signal to a separate intermediate frequency (using the pre-amplifier and mixer which are ~~contained in any case~~ included in the receiver part), a simple bandpass filter connected downstream and a simple AM receiver part connected downstream of the latter.

Please delete the paragraph beginning line 24 of page 4 in its entirety.

Please replace the paragraph beginning line 9 of page 5 with the following rewritten paragraph:

The components of a mobile phone 1 ~~which are essential in the context of the~~ in one embodiment of the invention and their interaction are shown ~~in sketch form~~ in Fig.1. A transmitter output stage 3, which receives a transmission signal at the input end, is connected at the output end via a transmission band-transmitting filter 5 to a feedpoint 7a of a combined transmission/reception antenna 7. A reception band-transmitting filter 11 is connected between the feedpoint 7a of the antenna 7 and the input of a reception pre-amplifier 9, at whose output a pre-amplified reception signal is made available. The transmission curves of the transmission

band-transmitting filter 5 and of the reception band-transmitting filter 11 have a frequency spacing from one another which is predetermined by the standard of the mobile phone system; ~~aeecording.~~ According to the GSM standard (which, however, also provides for time-division duplex between the reception and transmission mode), this spacing is, for example, 45 MHz. The two transmitting filters 5, 11 form together a duplex filter, of which, however, less is demanded in terms of the edge steepness of the filter characteristic curves with the proposed solution than is demanded with a conventional mobile phone duplex filter, and which can therefore be implemented using integrated silicon technology.

Please replace the consecutive paragraphs beginning line 11 of page 6 with the following rewritten paragraphs:

Fig. ~~42~~ shows that the compensation element 13 ~~aeecording to Fig. 4~~ has, in a preferred embodiment, a phase compensation element 13.1 and an amplitude compensation element 13.2 which is connected in series with the latter, both compensation elements 13.1, 13.2 each receiving a specific control signal "control of the phase response" or "control of the gain or attenuation" and their transmission characteristics being set by the respective control signal.

Fig. 3 is a further illustration of the mobile phone 1, according to Fig. 1, ~~a.~~ A compensation control element 15, which receives a supplementary information item for the transmission/reception mode as input signal and which ~~has the purpose of controlling~~ controls the compensation element 13, is also illustrated. The compensation control unit 15 can have a memory which is structured in the manner of a lookup table and in which assignments between predetermined transmission/reception frequencies or channels and suitable phase angle/amplitude response value pairs of the compensation element 13 are stored. If the mobile

phone has only one possible frequency constellation or channel constellation for the transmission/reception mode, just a single pair of values is correspondingly provided. In addition, in one particularly flexible embodiment, the compensation control unit 15 can additionally process information which characterizes the state of the system at a given time; see below.

Please replace the paragraph beginning line 6 of page 8 with the following rewritten paragraph:

The ~~proposed~~ embodiment can be implemented in integrated fashion using silicon technology, which is advantageous technologically and in terms of costs and service value. In the embodiment shown in Fig. 5, the mixer 21.1 and the pre-amplifier 21.3 of the AM receiver can be implemented with a mixer and pre-amplifier which are present in any case in the receiver part, so that in this respect there is no need for additional hardware expenditure.

In the Claims:

What is claimed is:

1. (Amended) A radio transceiver, ~~in particular mobile telephone (1;1';1'')~~, comprising:
 - a transmitter output stage (3);
 - a receiver part (9);
 - a transmission/reception antenna (7) which is jointly assigned to the transmitter output stage and the receiver part;

a transmission band-transmitting filter (5) which is connected between the output of the transmitter output stage and an antenna feedpoint (7a);

a reception band-transmitting filter (11) which is connected between the antenna feedpoint and the input of the receiver part; and

a compensation element (13) which is connected between the output of the transmitter output stage and the input of the receiver part and ~~has the purpose of compensating~~ compensates crosstalk from a transmission signal element onto the receiver part; and

a compensation control unit (15) ~~for to adaptively setting the set~~ compensation characteristics, ~~in particular the phase and amplitude of the output signal,~~ as a function of the input voltage or input power at the input of the receiver part (9) being assigned to the compensation element (13), ~~characterized by wherein~~ a voltage measuring device (17; 19; 21) which is connected to the compensation control unit (15) ~~and has the purpose of measuring~~ measures the input voltage of the receiver part (9), the voltage measuring device (21) comprising ~~means (21.1) for the~~ a device for IF conversion of the input signal of the receiver part (9), a bandpass filter (21.2) which is connected downstream ~~of the latter~~ and an AM receiver part (21.3, 21.4) which is connected to its output and whose output is used to set the compensation characteristics.

2. (Amended) The radio transceiver as claimed in claim 1, ~~characterized in that wherein~~ the compensation element (13) is connected in parallel with the transmission band-transmitting filter (5) and with the reception band-transmitting filter (11) to the input of a reception pre-amplifier (9) or reception mixer of the receiver part.

3. (Amended) The radio transceiver as claimed in claim 1 ~~or 2, characterized in that~~
wherein the bandpass filter (21-2) is tuned to ~~the~~ a reception frequency in narrowband fashion in
~~order to achieve a high level of sensitivity.~~
4. (Amended) The radio transceiver as claimed in ~~one of claims 1 to 3, characterized in~~
~~that~~ claim 1, wherein the compensation element (13) is integrated into an RF component of the
transmitter output stage (3) or of the receiver part (9).
5. (Amended) The radio transceiver as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, wherein the compensation element (13) ~~is embodied using~~
comprises highly integrated silicon technology.

Please add the following new claim:

6. (New) The radio receiver of claim 1, wherein the compensation characteristics include
phase and amplitude of the output signal.

In the Abstract:

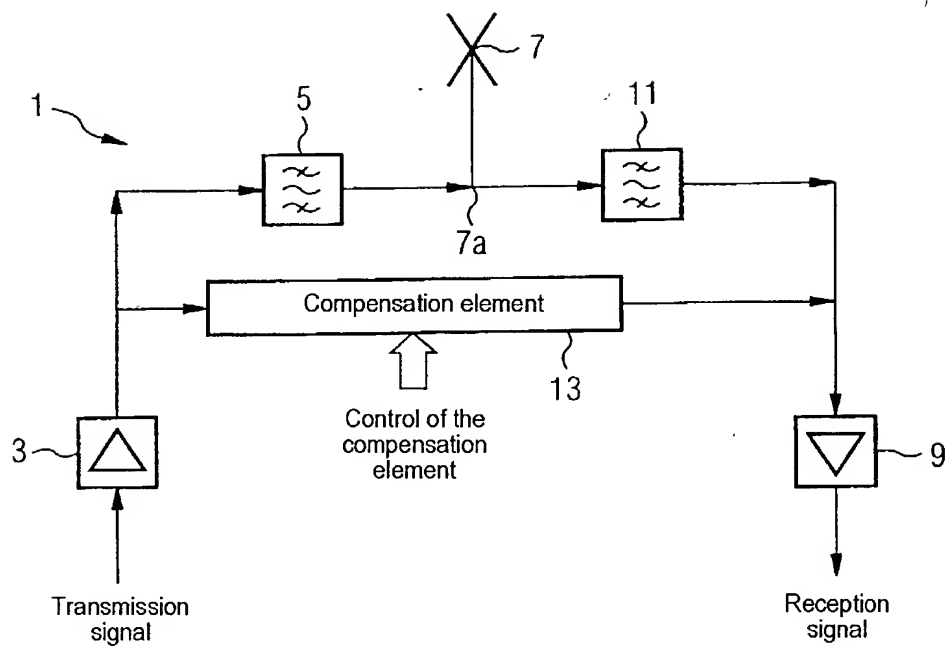
Please replace the Abstract in its entirety with the Abstract attached hereto.

RADIO TRANSCEIVERAbstract

Radio transceiver, in particular, a mobile telephone having a transmitter output stage, a receiver part, a transmission/reception antenna which is assigned jointly to the transmitter output stage and the receiver part, a transmission band-transmitting filter and a reception band-transmitting filter, having a compensation element, connected between the output of the transmitter output stage and the input of the receiver part, for compensating crosstalk of a transmission signal element onto the receiver part.

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FIG 1



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FIG 2

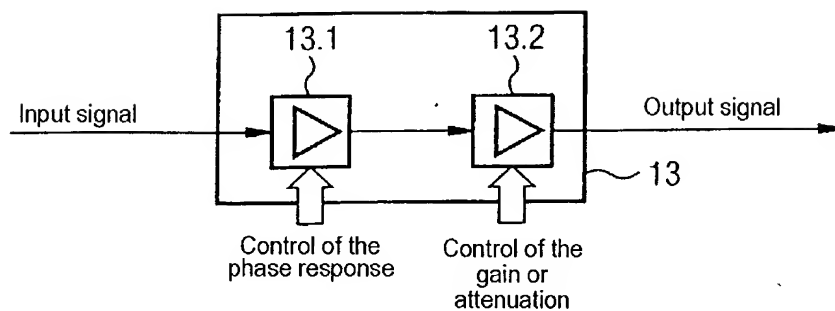


FIG 3

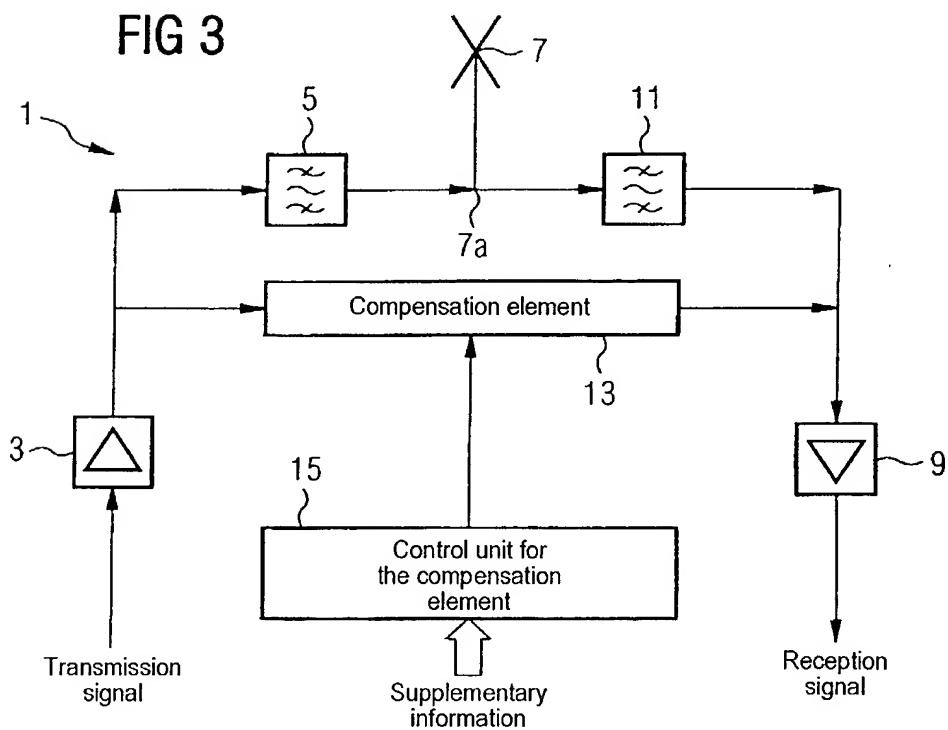
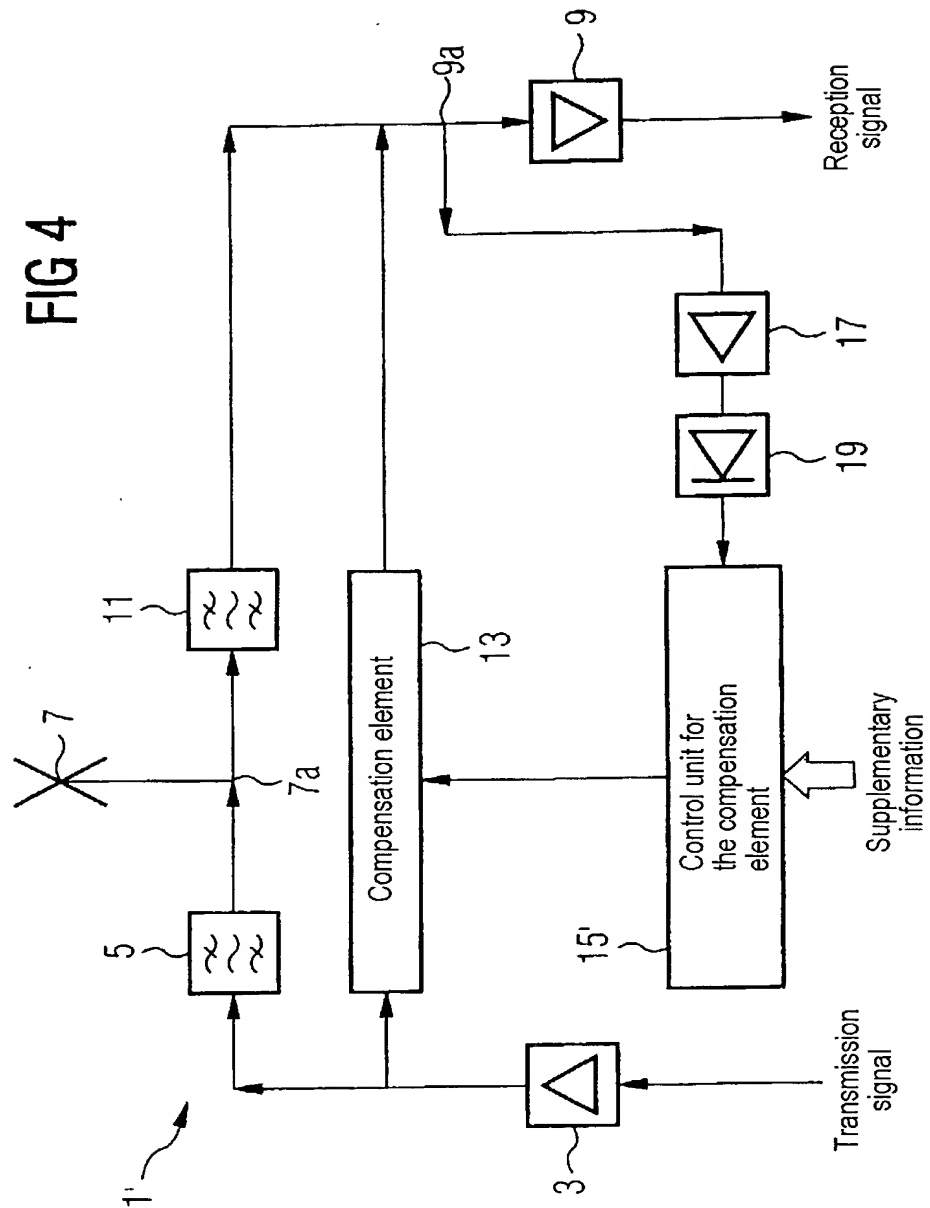


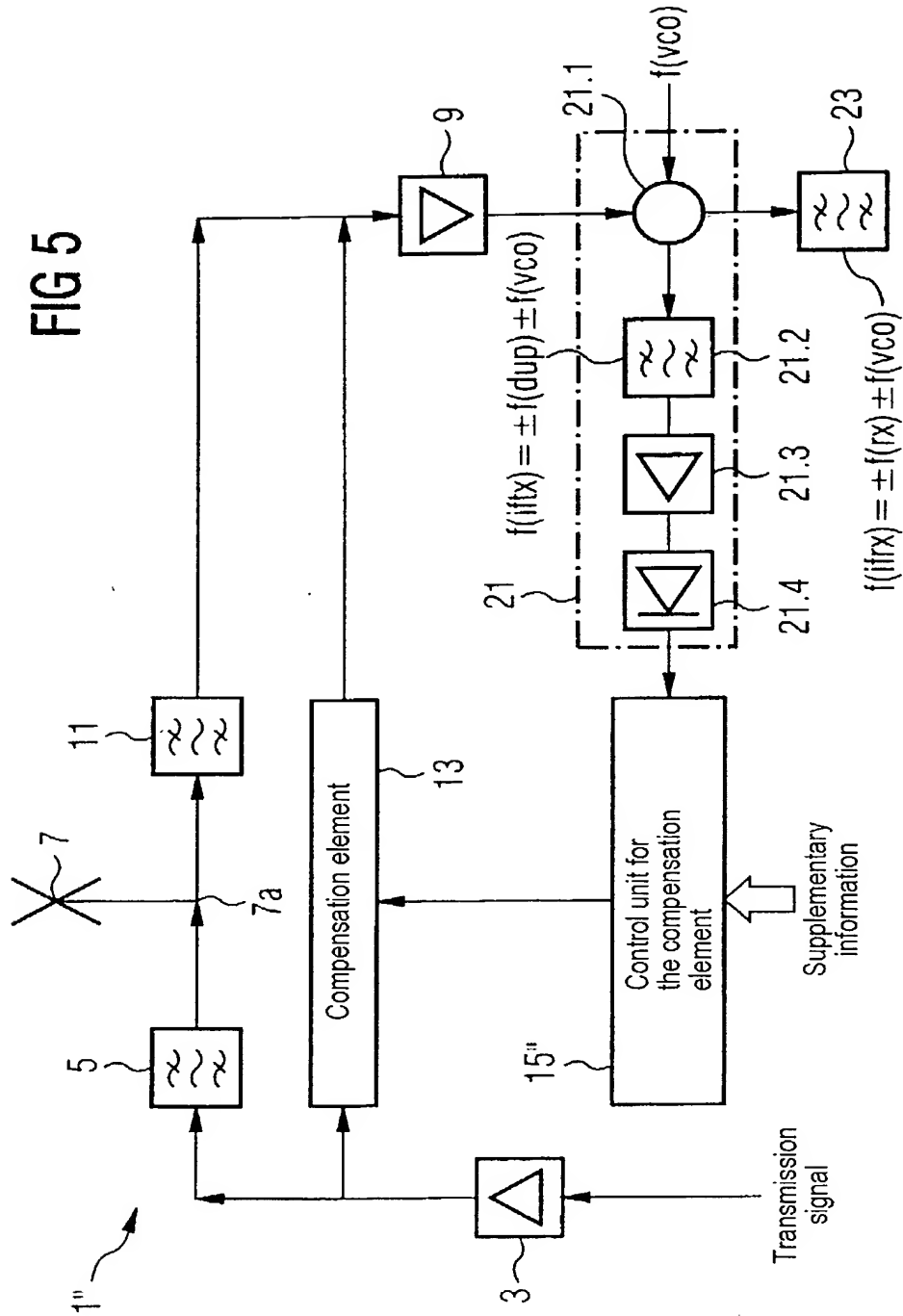
FIG 4



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FIG 5



Declaration and Power of Attorney For Patent Application

Erklärung Für Patentanmeldungen Mit Vollmacht

German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

My residence, post office address and citizenship are as stated below next to my name,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Funksende- und -empfangsgerät

Radio transmitter and receiver

deren Beschreibung

the specification of which

(zutreffendes ankreuzen)

(check one)

☐ hier beigefügt ist.

☐ is attached hereto.

☒ am 19.07.2000 als

☒ was filed on 19.07.2001 as

PCT internationale Anmeldung

PCT international application

PCT Anmeldungsnummer PCT/DE00/02361

PCT Application No. PCT/DE00/2361

eingereicht wurde und am _____

and was amended on _____ (if applicable)

abgeändert wurde (falls tatsächlich abgeändert).

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

German Language Declaration

Prior foreign applications
Priorität beansprucht

Priority Claimed

19934502.3

DE

22.07.1999

☒

☐

(Number)
(Nummer)

(Country)
(Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

Yes
Ja

No
Nein

(Number)
(Nummer)

(Country)
(Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

☐

Yes
Ja

☐

No
Nein

(Number)
(Nummer)

(Country)
(Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

☐

Yes
Ja

☐

No
Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

PCT/DE00/02361
(Application Serial No.)
(Anmeldeseriennummer)

19.07.2000
(Filing Date D, M, Y)
(Anmeldedatum T, M, J)

anhängig
(Status)
(patentiert, anhängig,
aufgegeben)

pending
(Status)
(patented, pending,
abandoned)

(Application Serial No.)
(Anmeldeseriennummer)

(Filing Date D,M,Y)
(Anmeldedatum T, M, J)

(Status)
(patentiert, anhängig,
aufgeben)

(Status)
(patented, pending,
abandoned)

Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden können, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

German Language Declaration

VERTRETUNGSVOLLMACHT: Als benannter Erfinder beauftrage ich hiermit den nachstehend benannten Patentanwalt (oder die nachstehend benannten Patentanwälte) und/oder Patent-Agenten mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Geschäfte vor dem Patent- und Warenzeichenamt: (Name und Registrationsnummer anführen)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business, in the Patent and Trademark Office connected therewith. (list name and registration number)

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And I hereby appoint

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Morrison and Foerster LLP
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Telephone: (001) 202 887 1500 and Facsimile (001) 202 887 0763

or
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Voller Name des einzigen oder ursprünglichen Erfinders: LUDWIG HOFMANN		Full name of sole or first inventor: LUDWIG HOFMANN	
Unterschrift des Erfinders <i>L. Hofmann</i>	Datum 20.1.2002	Inventor's signature	Date
Wohnsitz ILMMUENSTER, DEUTSCHLAND		Residence ILMMUENSTER, GERMANY	
Staatsangehörigkeit DE <i>DEX</i>		Citizenship DE	
Postanschrift DEKAN-FABER-RING 21A		Post Office Address DEKAN-FABER-RING 21A	
85304 ILMMUENSTER		85304 ILMMUENSTER	
Voller Name des zweiten Miterfinders (falls zutreffend):		Full name of second joint inventor, if any:	
Unterschrift des Erfinders	Datum	Second Inventor's signature	Date
Wohnsitz		Residence	
Staatsangehörigkeit		Citizenship	
Postanschrift		Post Office Address	

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).

(Supply similar information and signature for third and subsequent joint inventors).